



## Questions and Answers: Final rule to list the Missouri Distinct Population Segment of the eastern hellbender as endangered

### 1. What action is the Service taking?

The U.S. Fish and Wildlife Service is announcing a final rule to list the Missouri Distinct Population Segment of the eastern hellbender as endangered under the Endangered Species Act (ESA). The final rule can be found in the March 9, 2021, Federal Register.

The hellbender was included in a petition to list 404 aquatic species, submitted on April 20, 2010, by the Center for Biological Diversity and others. There are two subspecies of hellbender: the Ozark hellbender (*Cryptobranchus alleganiensis bishopi*) and the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*). The Service listed the Ozark hellbender as endangered on October 6, 2011.

After conducting a thorough species status review, the Service has determined that most populations of the eastern hellbender are not in danger of extinction and do not warrant listing under the ESA. However, the eastern hellbender population in Missouri is a distinct population segment (DPS) and the Service proposed to list this DPS as endangered in April 2019.

### 2. What is a distinct population segment?

A distinct population segment is a vertebrate population or group of populations that is treated separately from other populations of the species under the ESA, either because of geographic or genetic separateness, differences in its habitat, the threats it faces, ongoing conservation or management actions or other factors. While eastern hellbenders in other parts of the United States are not facing extinction, populations in Missouri are geographically and genetically distinct, meriting separate consideration under the Endangered Species Act.

### 3. What is the eastern hellbender and where is it found?

Hellbenders are the largest of North America's salamanders, growing up to two feet long. They can live 25 to 30 years and spend their entire lives in water. Hellbenders have a flattened body that enables them to move in fast flowing waters. They also have a large, keeled tail, tiny eyes and numerous fleshy folds along the sides of their bodies that provide surface area for respiration. They spend much of their time lying motionless under large, flat rocks. Hellbenders live in perennial streams and rivers of the eastern and central United States.

Hellbenders have an unusual reproductive strategy; the male tends the eggs and young. A male will find a large rock and burrow a space under the rock for egg laying. He then waits to entice a

female to his space. If successful, a female enters the burrow and he will not let her leave until she lays eggs that he fertilizes. The male then maintains and guards the nest until the eggs hatch. There are some indications that even after hatching, males will stay for a time to protect and tend to their young.

#### **4. Why did the Service determine that a distinct population segment of the eastern hellbender in Missouri should be designated?**

As part of the species status assessment, the Service identified and analyzed four distinct genetic lineages, called adaptive capacity units. The Missouri unit is comprised of five historic populations that are geographically and genetically separate from the rest of the subspecies. These populations represent a unique evolutionary lineage within the subspecies, which may provide important adaptive diversity. Because of the geographic and genetic separation, in addition to the importance of the Missouri populations to genetic diversity of the subspecies as a whole, the Service concluded that the Missouri population meets the discreteness and significance criteria as a distinct population segment.

#### **5. How did the Service determine that the Missouri distinct population segment of the eastern hellbender is endangered?**

Of the five historic populations in Missouri, none is considered healthy; four are declining and one is functionally extirpated. Most of these populations are predicted to continue declining over the next 25 years, with the projected number of healthy populations well below the historical condition (60 percent to 100 percent loss).

The low numbers and declining condition of populations within the Missouri distinct population segment have reduced its ability to withstand normal environmental variation (e.g., periods of unusually high or low temperatures, periods of unusually high or low rainfalls), periodic disturbances, ongoing threats and potential catastrophic events. It is the Service's determination that the Missouri distinct population segment of the eastern hellbender is currently in danger of extinction.

#### **6. What is causing the decline of eastern hellbenders in Missouri?**

The most significant risk factors affecting eastern hellbenders in Missouri are habitat destruction and modification from sedimentation and water quality degradation, disease and pathogens, unauthorized collection for the pet trade and habitat disturbance. These risk factors are the primary causes of the decline in eastern hellbender populations in Missouri now and into the future.

Sedimentation is the addition of fine soil particles to streams. These sediments bury shelter and nest rocks, suffocate eggs, alter habitat for crayfish (the primary food source of adult eastern

hellbenders), and degrade habitat for larval and juvenile hellbenders, as well as habitat for macroinvertebrates, which are an important food source for larval hellbenders.

Water degradation stems from sources of aquatic pollutants that include domestic waste, agricultural runoff, road construction and unpermitted industrial discharge.

Emerging infectious diseases, especially fungal diseases in wildlife, are on the rise.

*Batrachochytrium dendrobatidis* (*Bd*) is a fungal pathogen that can cause a highly infectious amphibian disease. *Bd* infection of eastern hellbenders has been confirmed in every state where testing has occurred, including Missouri.

Habitat disturbance is mostly a result of recreationists (canoeists and tubers) moving the large rocks that hellbenders use for shelter and nests. Direct mortality or permanent removal is a result of collection for the pet trade, personal use or scientific study.

#### **7. Why didn't the Service designate critical habitat for the Missouri distinct population segment of the eastern hellbender?**

The Service determined that designating critical habitat is not prudent because collection and trade of eastern hellbenders is a primary threat. Designation can reasonably be expected to increase the degree of these threats due to the necessity of publishing maps and narrative descriptions of specific critical habitat areas if critical habitat is designated.

#### **8. What is being done to protect and conserve eastern hellbenders, across their range?**

Zoos are rearing and "head-starting" eastern hellbenders to avoid the high mortality that occurs during the first few years of life. Zoo-rearing and head-starting involves raising larval hellbenders until they are large enough to avoid most predators and then releasing them back into occupied streams and rivers to bolster populations.

Artificial nest boxes have been successfully used in multiple states for reproduction.

To help combat the illegal trade of hellbender, both subspecies (Ozark and eastern), are listed under Appendix III of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which addresses native species that need regulation to prevent or restrict exploitation.

#### **9. How does listing the Missouri distinct population segment of the eastern hellbender help its conservation?**

Listing focuses conservation planning and funding, raises awareness that can lead to additional conservation opportunities, and would help protect hellbenders in Missouri from intentional and unintentional harm.

The ESA requires the Service to prepare a recovery plan for each listed species. A recovery plan identifies and prioritizes actions needed to conserve and recover a species. Non-governmental agencies, universities, tribes and other federal and state agencies often carry out conservation actions identified in recovery plans. Federally listed threatened and endangered species are usually considered as priorities during land-use planning.

Listing will also help protect Missouri's hellbenders by prohibiting "take" under section 9 of the ESA. The take prohibition includes significant habitat modification or degradation that results in the direct killing or injury to listed animal species. States may also have their own laws restricting activity that affects federally listed species.

In addition, section 7 of the ESA requires other federal agencies to consult with the Service to ensure that their actions are not likely to jeopardize the continued existence of eastern hellbenders in Missouri. Through this consultation, the Service works with the federal agency and advises on whether the actions would affect the hellbender as well as ways to avoid those impacts.

#### **10. Why is it important to protect and conserve eastern hellbenders?**

Hellbenders spend their entire lives in water; their presence or absence can indicate the health of the stream and river systems where they live and where they have been lost. The risk factors affecting hellbenders may affect other plants and animals living in those waterways. The fact that Missouri's hellbenders are having a difficult time surviving indicates there may be problems in their river and stream environments, water that people use for recreation and as a source for drinking water.

#### **11. What can I do to help the eastern hellbender?**

If you catch a hellbender while fishing, simply cut the line near the head and release it back into the river.

Protect hellbenders from disturbance. They depend on large flat rocks for shelter. If you're canoeing, fishing or swimming, do not move those rocks – they need to be left in place. If you canoe or fish, keep rivers and lakes clean by leaving no waste behind.

Help keep local rivers and streams clean and natural. Join a local stream team, a volunteer organization that brings people together to clean, care for and monitor waterways.

Keep pollutants out of watersheds by minimizing use of pesticides and properly disposing of household toxic waste. Avoid washing spills, dirt and debris down storm drains.

**13. Where can I learn more about the eastern hellbender Missouri DPS and the final rule to list it as endangered?**

Information is available online at

[www.fws.gov/midwest/endangered/amphibians/eastern\\_hellbender](http://www.fws.gov/midwest/endangered/amphibians/eastern_hellbender) or you may contact the U.S. Fish and Wildlife Service's Columbia, Missouri Field Office at:

Karen Herrington, Field Supervisor  
Missouri Ecological Services Field Office,  
101 Park DeVille Drive, Suite A  
Columbia, Missouri 65203

Phone: 573-234-2132.

If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.